

REMARKS

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

The rejection of claim 5 under 35 U.S.C. § 112, second paragraph, for indefiniteness is respectfully traversed in view of the above amendments.

The rejection of claims 1-14, 19, and 21-32 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,284,748 to Mroczkowski et al. ("Mroczkowski") is respectfully traversed. Mroczkowski relates to a method for detecting the occurrence of a binding or complex-forming reaction between specific substances by utilizing the binding reaction to modify an electrical circuit, and then measuring a change in the electrical state of the circuit. In particular, Mroczkowski teaches a diagnostic element including a pair of spaced-apart, electrical conductors disposed on a substantially non-electrically conducting base. The space between the conductors defines a channel. One of a pair of binding substances (e.g., antigen-antibody) is affixed in the channel such that binding to the other of the pair of binding substances (which is adhered to the surface of an electrically conductive particle) causes full or partial completion of an essentially open electrical circuit. Mroczkowski teaches that antigens which can be used (e.g., bound to the channel) include drugs, toxins, hormones, allergens, tumor markers, factors, enzymes, steroids, and nucleotides.

It is the position of the U.S. Patent and Trademark Office that Mroczkowski teaches electrically conducting interface components 23B, 24B, nucleotide fibers 30B, and conductive particles 14B complexed along the fibers to form a conductive layer. Applicants respectfully disagree.

In contrast, claim 1 (and its dependent claims 2-17 and 19-27) relates to "[a]n electric network comprising: - at least one nucleotide fiber comprising a chain of nucleotides and defining the networks geometry; and - one or more substances, molecules, clusters of atoms or molecules or particles bound to said nucleotide fiber or complexed therewith continuously along said fiber to form at least one electric or electronic component or a conductor" and claim 28 (and its dependent claims 29-32) relates to "[a] method for making an electronic network, comprising: (a) providing an arrangement comprising at least one electrically conductive interface component; (b) attaching a linker to the at least one interface component; (c) contacting said arrangement with at least one nucleotide fiber comprising a chain of nucleotides and defining the network's geometry, with a sequence capable of binding to the linker, and permitting binding of said sequences to said linker; and

(d) electrically or electronically functionalizing the at least one nucleotide fiber by depositing thereon or complexing thereto at least one substance or particles.” Mroczkowski neither discloses nor suggests the use of a nucleotide fiber comprising a chain of nucleotides, as required by claims 1 and 28 (and their dependent claims). Mroczkowski discloses an antigen layer 30B which is bound in a channel between two electrodes. The antigen layer 30B, at best, includes a plurality of individual antigens positioned throughout the channel to form a “carpet” of antigens. Mroczkowski mentions that the antigen can be a nucleotide. However, there is no disclosure in Mroczkowski that the individual antigens in the antigen layer 30B are linked together to form a chain (i.e., a sequence of nucleotides bound end to end like links in a chain), as claimed in the present application.

The significance of this difference is that in the present invention an elongate conductive component may be formed by hybridization at two ends of a nucleic acid molecule, rather than by numerous separate binding events by individual nucleotides. As shown in Figures 3A-B of the present application, the space between electrodes 300 can be bridged by hybridization of both ends of nucleotide fiber 310 to oligonucleotide linkers 306 and 308. By contrast, in Mroczkowski, sufficient antigens 12A and antibodies 15A/B with bound particle 14A/B must be separately linked together and deposited in the space between electrodes 23A/B and 24A/B in order to conduct current between the electrodes.

Moreover, with regard to dependent claims 2, 10, 14, and 23, Mroczkowski neither discloses nor suggests a “wire,” which is defined in the present application as a functionalized fiber (which comprises at least one nucleotide chain) with bound substance or particles which give rise to electric conductivity along the fiber (see, e.g., page 5, lines 14-16 and page 7, line 26 to page 8, line 4). With regard to dependent claims 3-4, 7, and 19, as Mroczkowski neither discloses nor suggests nucleotide fibers comprising a chain of nucleotides, as described above, there is no disclosure or suggestion in Mroczkowski of junctions between multiple nucleotide fibers, or between a nucleotide fiber and a linker that binds a nucleotide fiber to an electronic component of the network. Moreover Mroczkowski neither discloses nor suggests chemically modified nucleotides in a junction between a nucleotide fiber or an electronic component and an interface component, as claimed in claim 7, as no mention of a junction at an interface component or binding to an interface component is made in Mroczkowski (see also claims 22 and 24-26). With regard to dependent claim 5, there is no disclosure or suggestion of an entity bound to one or more of the at least one nucleotide fiber which changes from an electrically conducting to an electrically non-conducting state by transfer of electrons to or from the entity. With regard to dependent claim 14, antibodies are insulating and cannot form a conductor, therefore, Mroczkowski

neither discloses nor suggests a wire formed by a non-metallic conducting substance bound to a nucleotide fiber or portion thereof.

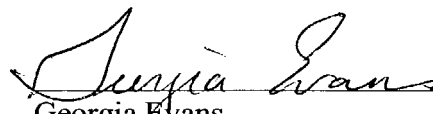
Accordingly, the rejection based on Mroczkowski is improper and should be withdrawn.

The objection to claims 15-17 and 20 as being dependent upon a rejected base claim is respectfully traversed in view of the above remarks.

In view of all of the foregoing, applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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